Executive Summary

Failure to recognize potentially incapacitating medical conditions can have serious safety consequences for railroad employees, the railroads and the public. Conditions such as seizure disorders, cardiovascular disease and sleep disorders, as well as some prescription and over-the-counter medications, may put the employee at risk of being unable to perform his or her safety-critical job. Several modes of transportation in the U.S., in particular motor carrier, aviation and maritime, have regulations and a government-mandated process in place to minimize the risk of an employee performing a job in the presence of a medical condition or medication that has the risk of compromising the employee's ability to safely carry out the requirements of the job. Recommendations from a National Transportation Safety Board (NTSB) investigation of a serious train accident resulting from the medical condition of the employees led the Federal Railroad Administration (FRA) to examine the need to adopt more rigorous medical standards for railroad workers with safety-sensitive functions, as defined by 49 C.F.R. § 209.303.

In addition to the NTSB's recommendations with regard to a medical standards program for railroad workers, the demographics of the U.S. railroad workforce justify the need for such a program. The U.S. railroad workforce is an aging one. Over 60 percent are between the ages of 45 and 64. Epidemiological data from the National Center for Health Statistics indicates that 13.7 percent of males in this age range have heart disease and over 28 percent have hypertension. Both of these conditions are associated with increased risk of sudden incapacitation. An adult population is also susceptible to sleep disorders. The National Sleep Foundation estimates that 4 percent of middle-aged men and 2 percent of middle-aged women experience excessive daytime sleepiness resulting from sleep apnea. Sleep disorders are also associated with increased risk of sudden incapacitation.

This report provides information for the FRA to use in assessing the need for a medical standards program and determining an appropriate course of action for the railroad industry. The objectives of the work described in this report were to:

- Assemble information to assess the need for medical standards in the U.S. railroad industry.
- Formulate options for a medical standards program.
- Make recommendations on the feasibility and need for a medical standards program for the U.S. railroad industry.

The work described in this report had three phases: 1) information gathering, 2) analysis and 3) formulation of recommendations. Assembling relevant data involved literature search and review, structured interviews with medical and administrative personnel from relevant agencies and railroads, analysis of FRA and National Transportation Safety Board accident and injury reports, and review of dispute resolution provisions of current labor agreements. The analysis phase involved comparing the existing FRA medical standards program for vision and hearing with programs of the other U.S. Department of Transportation (DOT) modal administrations and with five foreign programs. Options for various aspects of a medical standards program were defined based on existing U.S. railroad industry practices and the examples provided by foreign programs and the other modes of transportation. This phase also included defining alternative

medical standards program models and estimating the resource requirements for each. The final phase focused on drawing conclusions and formulating recommendations.

The study examined existing programs of three U.S. DOT modal administrations, five foreign rail oversight agencies/organizations, and a total of 12 railroads representing Class 1, regional/short line and commuter operators. Table 1 provides the names of the organizations that provided information for this study.

Table 1. Organizations contacted regarding medical standards programs

Category	Organizations
U.S. DOT modal administrations	Federal Aviation Administration (FAA), Federal Motor Carrier Safety Administration (FMCSA), U.S. Coast Guard (USCG)[1]
Foreign railroad oversight agencies/organizations	Transport Canada, National Transport Commission (Australia), Rail Safety and Standards Board (U.K.), Secretaria de Comunicaciones y Transportes (Mexico), Union Internationale des Services Médicaux des Chemins de fer
Class 1 railroads	Burlington Northern Santa Fe Railway, CSX Transportation, Kansas City Southern Railroad, Norfolk Southern Railroad, Union Pacific Railroad
Commuter railroads	Metro-North Railroad, NJTransit
Short line/regional railroads	Belt Railway of Chicago, Florida East Coast Railway, holding company[2], Montana Rail Link, RailAmerica

DOT Modal Administrations

Three DOT modal administrations have medical standards programs that are more extensive than the current FRA vision and hearing requirements. The FAA programs for pilots and air traffic control specialists are the most comprehensive and most centralized within the agency. Only FAA-certified aviation medical examiners may issue medical certificates. In contrast, FMCSA and the Coast Guard permit any health care provider who is permitted to perform independent examinations by their state license, to perform their exams. The FAA program is the most resource intensive. All three modal administrations have a procedure for determining if an employee who does not meet some regulations/guidelines can work. The process for pilots includes appeal to the NTSB. All agencies provide some level of guidance to their examiners.

Foreign Medical Standards Programs

All foreign programs reviewed have more extensive medical standards programs for their railroad workers than the U.S. The Mexican program is the most centralized with the Secretaria

[1] As of March 1, 2003, the U.S. Coast Guard is part of the U.S. Department of Homeland Security.

[2] One railroad requested that it not be identified by name.

de Comunicaciones y Transportes overseeing all modes of transportation and requiring daily fitness-to-work exams as well as periodic medical evaluations by government appointed physicians. The Australian, Canadian and U.K. programs allow railroads to select the examiners and make the final determination of medical fitness. There is no waiver process in these countries although Mexico does allow the de-certified employee to request a re-examination. The Australian program went into effect in July 2004. It includes a process that each railroad must use to identify its safety-sensitive positions. In contrast, the programs in the other countries cover all engineers, conductors, brakemen and dispatchers. Railroads from 28 countries, primarily in Europe, have medical standards programs that meet the minimal standards of medical fitness adopted by the Union Internationale des Services Médicaux des Chemins de fer.

Current Industry Practices

Existing medical practices of the 12 U.S. railroads reviewed have several similar aspects. In addition to the tri-annual vision and hearing examinations, all require a medical examination on three occasions: 1) post-offer, 2) upon promotion to a safety-critical position, and 3) when medical fitness-to-work is questioned. In addition, return-to-work following a medical leave of absence requires review of the treating physician's report and, in some instances, a medical examination by a company-selected physician. A review of 35 labor agreements on file with the National Mediation Board found that none of the agreements establish when medical examinations could be required although each indicates they are normally given upon an employee's return-to-work from a medical leave of absence. Beyond this, current practices vary from railroad to railroad. Only three railroads require periodic medical examinations that go beyond the current tri-annual vision and hearing screening for engineers. Most railroads do not have written standards. Some provide a copy of the employee's job description to the medical examiner and others do not. No railroad clearly defines the medical conditions and prescription drugs that safety-sensitive employees must report to the railroad. One railroad does provide an 800 number that employees and their health care providers can call for advice on this issue.

Accident and Casualty Data

Five sources of accident and casualty data were examined: NTSB railroad accident reports, FRA Accident/Incident data, FRA Illness/Injury data, FRA Employee-on-Duty Fatality reports, and FRA survey data on use of prescription and over-the-counter drugs.

- *NTSB* - From 1989 to 2003, NTSB accident investigations included two cases in which medical condition of a crew member was the probable cause of the accident. In two other accidents, NTSB believed that medical condition was related to probable cause, but not the probable cause itself. In a fifth case, the NTSB discovered undiagnosed medical conditions that did create a safety risk.
- *FRA Accident/Incident data* - Review of FRA Accident/Incident data for the period 1989-2003 identified 50 accidents/incidents in which the physical condition of the employee was the primary cause. Three of these had clear medical causes. In 41 cases the employee fell asleep but it is not possible to determine if this was due to lack of sleep or an underlying medical problem. The remainder were due to "Impairment of efficiency or judgment due to drugs or alcohol." In addition, there were 31 FRA reportable accidents since 1989 where employee physical condition was the secondary cause. Seventeen of these are linked to drug and alcohol use, one was from incapacitation due to injury or

illness, nine were categorized as "employee asleep," and four were categorized as "employee physical condition/other."

- *FRA Injury/Illness data* – Since the FRA began collecting detailed injury/illness data in 1997, there have been 975 instances linked to substance use or physical condition and fatigue. Five were positively related to medical condition, 30 were questionably related, and the remaining 940 are incomplete or unclear.
- *Employee-on-duty fatalities* – The FRA Office of Safety report on employee-on-duty fatalities indicates that of the 36 employee-on-duty fatalities in 2003, 20 (56 percent) were due to medical conditions, primarily heart attacks. These employees ranged in age from 47 to 74.
- *Use of prescription and over-the-counter drugs* – Review of data collected by FRA field accident investigators between April 2002 and July 2004 for human factors caused accidents indicates that 10 percent of the employees involved in these accidents were taking prescription and over-the-counter medications that have the potential to impair cognitive function.

While there have been few accidents where the medical condition of the employee was clearly the cause of the accident, a medical standards program requiring periodic medical examinations likely would have identified the condition that caused these accidents. The significant proportion of employee-on-duty fatalities due to medical conditions indicates that there may be significant risk of an employee performing a safety-sensitive function becoming incapacitated.

Medical Literature Review

The majority of the medical literature on operator impairment focuses on automobile drivers and commercial motor vehicle operators. There is limited literature from the aviation community and none for railroad environments. The available medical literature consistently links performance impairment to sleep disorders, certain medications and hypoglycemia. There is some evidence that other medical conditions, such as seizures and heart disease impair performance. There is also a relationship between the risk of impairment or sudden incapacitation and poorly controlled medical or end stage conditions. The medical literature also documents that both individuals and their health care providers are often unable to judge the degree of impairment. In many cases health care providers are not aware of the safety-sensitive work of their patients or existing regulations and standards, particularly with regard to driving.

Legal Considerations

Any medical standards program for railroad workers must comply with the Railway Labor Act, the Americans with Disabilities Act (ADA), the recently implemented Health Insurance Portability and Accountability Act (HIPAA) regulations, and in so far as possible, existing labor agreements. The Railway Labor Act requires that wages, hours and conditions of employment be collectively bargained between management and the various unions representing railroad employees. Union participation in the development of a medical standards program will comply with any obligations under the Railway Labor Act and will facilitate acceptance in future negotiations.

The ADA prohibits discrimination against "qualified individuals with a disability." A disability is a physical or mental impairment or disorder that substantially limits the person's ability to

perform a "major life activity" such as seeing, working, hearing, etc. Many courts have taken a restrictive view of what qualifies as a "major life activity" resulting in findings of no disability. In addition, courts have consistently found that safety considerations that are required for the essential functions of the job limit ADA application as a matter of law. However, under the ADA, only those who pose a direct threat of substantial harm can be disqualified.

Many existing labor agreements provide for a tripartite medical panel to resolve disputed medical issues. This panel consists of one physician chosen by the employer, one chosen by the employee and a third agreed to by both the employee and the employer. Some agreements further require that the neutral third physician be a specialist in the relevant medical problem, and some require that the neutral physician be familiar with the nature of the employee's job. This dispute resolution process could be used to resolve issues arising from a comprehensive medical standards program. It is possible that the existing grievance/arbitration process could be used in cases where the employee does not meet the medical regulations/guidelines but believes, due to unique circumstances, s/he should be allowed to continue in his/her present position or a similar one.

The Health Insurance Portability and Accountability Act of 1996 (HIPAA) should not be an impediment to new medical standards in the railroad industry. If an FRA regulation requires periodic medical examinations, then HIPAA would permit the medical examiner to provide the results of the examination to the railroad and/or the FRA.

Program Options

The medical standards programs of the U.S. DOT modal administrations and foreign countries suggest a number of options that could be incorporated into an FRA medical standards program. In some cases the appropriate option is clear, but in others the choice is not as clear cut, and will require input from stakeholders to make a decision. Table 2 summarizes the latter group of components along with the options for each program component. The medical criteria should be contained in regulations that are supported by guidelines. These guidelines should be developed by medical specialists, either railroad medical specialists or an independent panel of medical specialists. The medical standards from the DOT modal administrations and the foreign railroad oversight agencies, as well as the Railroad Retirement Board disability criteria, provide a basis for developing U.S. railroad standards.

Resource requirements will be a function of the level of involvement that the FRA has in the overall medical standards program. While it is difficult to make a precise resource estimate until decisions on all program components have been made, it is possible to estimate the FRA staffing levels for three alternative levels of FRA involvement. All three models assume that 1) there are generally stated regulations with more specific guidelines, 2) the FRA convenes a panel of medical specialists to draft the medical guidelines, and 3) existing dispute resolution mechanisms, specifically the tripartite panel and arbitration, are used. Table 3 summarizes the three options along with their corresponding staffing requirements.

Table 2. Medical standards program components requiring input from stakeholders

Component	Options
Positions covered	1. All functions defined as safety-sensitive by 49 C.F.R. § 209.303 2. Require each railroad to conduct a risk analysis to identify covered functions 3. All positions defined as safety-sensitive by 49 C.F.R. § 209.303 with procedure available for a railroad to justify otherwise
Development of medical criteria	1. Done by railroad medical specialists 2. Done by independent panel of medical specialists
Timing of examinations	1. At fixed interval 2. Interval based on age
Examiners	1. Any health care professional licensed to perform medical examination 2. Physician only --- 1. Examiners trained and certified by organization that is approved by the FRA 2. Examiners, with knowledge of railroading, selected by the railroad
Waivers	1. FRA Medical Officer grants waiver 2. FRA Medical Review Board grants waiver 3. Railroad CMO makes decision in accordance with guidelines
Transferability of medical certification	1. Medical certification for current employer only 2. Medical certification for railroad industry 3. Medical certification for railroad industry but employer may request re-examination
Audit of examinations	1. Allow railroad personnel to do quality control on their examiners 2. Third party administrator hired by railroad does quality control

Conclusions

Review of the information summarized above led to the following conclusions:

- There is a need for a consistent industry-wide medical standards program.
- The U.S. railroad medical standards program is significantly less comprehensive than that of other DOT modal administrations and foreign countries.
- There have been several accidents and injuries due to medical condition of the employee. A medical standards program could likely have prevented these accidents.
- The medical literature supports performance impairment from sleep disorders, hypoglycemia and certain medications. There is some support for other conditions.
- Individuals and health care providers are often unable to assess the degree of impairment.
- Health care providers are often unaware of regulations and guidelines regarding medical conditions and risk of incapacitation.
- Existing railroad industry processes, and regulations and guidelines from the DOT modal administrations and other countries provide a basis for development of a U.S. program.

Table 3. Alternative models of FRA involvement in medical standards program and corresponding staffing requirements

	Model		
	A	**B**	**C**
Certify examiners	✓	Audit process	Audit process
Review results of exams	✓		
Review and permit employees not meeting regulations/guidelines to work	✓	✓	
Advise on resources examiner should use in making determination	✓	✓	
Convene medical panel to develop initial guidelines and update periodically	✓	✓	✓
Perform process oversight	✓	✓	✓
Staffing	3 form reviewers (non-medical) 10 support staff 1 manager, examiner certification 330 medical examiners 1 part-time physician in each region to review examination results	1 FRA Medical Program Manager (not an MD) 1 FRA Medical Officer (full-time for 6 months until program is set up, then part-time) 1.5 full-time equivalent support staff	1 FRA Medical Program Manager (not an MD) 1 support staff

- The existence of a medical standards program will provide consistency across the industry and will reduce the risk of accidents due to the sudden incapacitation of an employee.

Recommendations

- The FRA should expedite development to the extent possible.
- The FRA should identify a group, such as the Railroad Safety Advisory Committee (RSAC)[3], representing stakeholders to recommend the program structure.
- The program should have generally stated regulations with more specific supporting guidelines.

[3] RSAC consists of representatives from all of FRA's major customer groups. This committee develops consensus recommendations for rulemakings and other safety program issues.

- The program should build on existing resources and processes to facilitate program development and implementation.
- The program must assure that examiners understand the safety-sensitive functions of railroad jobs.

Critical Issues

The process of developing options for the program components identified several key issues that must be addressed by the group that designs the medical standards program. These issues are the following:

- What options are available for employees not meeting new criteria at program inception?
- What can be challenged and what process is used for dispute resolution?
- What is the scope of the medical standards?